PATENT APPLICATION
Docket No.: 4591-346
Client Ref. No.: IH12108-US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Sam-Jong CHOI, et al.

Serial No.:	10/684,343	Examiner:	Nguyen, Dilinh P.
Filed:	October 10, 2003	Group Art Unit:	2814
Confirmation No.:	9253		
For:	SEMICONDUCTOR WAFER HAVING IDENTIFICATION INDICATION		

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AMENDMENT AFTER FINAL REJECTION UNDER 37 CFR 1.116

Responsive to the Final Office Action, Paper No. 1205, dated December 28, 2005, and Advisory Action dated March 21, 2006, please amend the application as follows.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 4 of this paper.

IN THE CLAIMS

1. (Currently amended) A semiconductor wafer comprising:

a top surface, a bottom surface, and an outwardly convex edge surface connecting the top surface and the bottom surface, the convex edge surface having a first circumferential portion and a second circumferential portion, the convex edge surface having

an upper side surface,

a lower side surface, wherein the lower side surface is wider in the first circumferential portion than in the second circumferential portion, and

a marking region disposed in the first circumferential portion on the lower side surface, wherein a wafer identification indication is carved in the marking region~~, wherein the convex edge surface is asymmetric with respect to the upper and the lower side surfaces, and wherein the lower side surface has a wide region and a narrow region in a plan view of the bottom surface~~.

2-4 (Cancelled)

5. (Currently amended) The semiconductor wafer of claim 1, wherein the ~~narrow region of the~~ lower side surface in the second circumferential portion is the same width as the upper side surface.

6. (Original) The semiconductor wafer of claim 1, wherein a thickness of the upper side surface is thinner than the thickness of a region on the lower side surface.

7. (Previously presented) The semiconductor wafer of claim 1, wherein the lower side surface is thicker than the upper side surface along the entire circumference of the semiconductor wafer.

8. (Original) The semiconductor wafer of claim 1, wherein the wafer identification indication comprises dots that are formed by a laser beam.

9. (Original) The semiconductor wafer of claim 1, wherein the wafer identification indication comprises patterns representing information.

10. (Cancelled)

11. (Currently amended) A semiconductor wafer comprising:

an outwardly curved edge surface, the curved edge surface having

an upper side surface,

a lower side surface, and

a marking region disposed on the lower side surface, wherein a wafer identification indication is carved in the marking region, and wherein the curved edge surface is asymmetric with respect to the upper and the lower side surfaces, and wherein the lower side surface has a wide circumferential region and a narrow circumferential region in different portions of a perimeter ~~region in a plan view~~ of the semiconductor wafer.

12. (Previously presented) The semiconductor wafer of claim 11, wherein a width of the upper side surface equals a width of the lower side surface.

13 (Previously presented) The semiconductor wafer of claim 11, wherein a width of the upper side surface does not equal a width of the lower side surface.

14. (Previously presented) The semiconductor wafer of claim 11 wherein the marking region includes indentations that identify the wafer.

15-21. (Cancelled)

22. (New) The semiconductor wafer of claim 1, wherein the convex edge surface is asymmetric with respect to the upper and the lower side surfaces.

REMARKS

Claims 1, 5-9, 11-16, and 20-22 are pending in the application.

Claims 1, 5, and 11 are currently amended.

Claims 10, 15-16 and 20-21 are cancelled without prejudice.

Claim 22 is new.

No new matter is added.

Applicant requests reconsideration and allowance of the claims 1, 5-9, 11-14, and 22 in light of the above amendments and following remarks.

Claim Rejection – 35 U.S.C. § 112

Claim 20 was rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 20 is cancelled without prejudice. Therefore, the rejection under 35 U.S.C. 112 is now moot.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 3-16 and 20-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Hiroshi, et al., JP 10-256105 ("Hiroshi") (previously applied) in view of Hermann, et al., DE 10131246 ("Hermann") (newly cited).

Applicant respectfully traverses the rejection.

Claim 1 has been amended to recite that the convex edge surface has a first circumferential portion and a second circumferential portion, and the lower side surface of the convex edge surface is wider in the first circumferential portion than in the second circumferential portion. Support for this amendment can be found in the Specification, for example, in FIG. 5A. This figure shows an embodiment that is useful in explaining the claim terms recited in claim 1. This figure shows a plan view of the bottom surface 135 of the semiconductor 100. In this view, different circumferential portions of the lower side surface 124 may have different widths along the wafer's circumference. Namely, the lower side surface 124 includes a wide region 160 and a narrow region 150. The wide region 160 and the narrow region 150 each have different widths.

Both Hiroshi and Hermann fail to teach one circumferential portion that is wider than another circumferential portion on a lower side surface of the convex edge surface of a semiconductor wafer, as required by claim 1. For example, Hiroshi's FIG. 1 shows a wafer with a bevel that one may consider to be a lower side surface, yet this lower side surface only has a single width, i.e., there is no wide region and narrow region for different circumferential portions. Similarly, this is the case for Hermann. In fact, Hermann teaches away from one circumferential portion that is wider than another circumferential portion in FIG. 2 as follows. In this figure, a wafer W apparently gains its beveled, rounded edges by a type of grinding wheel PSS as the wafer W rotates on the stage SC. It is noted in the text (lines 55-61) and the figure that both the stage SC with the wafer W and the grinding wheel PSS rotate. The stage SC rotates up to 50 rotations per minute (line 57) and the grinding wheel PSS rotates more than 2000 rotations per minute (line 58). This arrangement and operation taught by Hermann will necessarily place a profiled edge that is constant along the entire circumference of the wafer W. In other words, Hermann only teaches a single circumferential portion, which is the same as the entire perimeter of the wafer and has a single width, thus teaching away from the limitations of claim 1.

The arguments presented above for claim 1 can apply also to claim 11. In this claim, an added limitation recites that the lower side surface has a wide circumferential region and a narrow circumferential region in different portions of a perimeter of the semiconductor wafer.

Because Hiroshi and Hermann both fail to teach, anticipate, or show each and every limitation of the claims, applicant requests withdrawal of the rejections for claims 1 and 11.

Claims 1, 5-9, 11-16, and 20-21 respectfully, in various orders, depend upon claims 1 and 11 and inherently include all of the limitations of their respective base claims. As discussed above, the prior art does not teach the limitations of the base claim much less the further embodiments of the dependent claims. Therefore, claims 1, 5-9, 11-16, and 20-21 are allowable for their dependency and their own merits. Allowance of these claims is requested.

Claims 3, 4, and 10 have been cancelled without prejudice.

For the foregoing reasons, reconsideration and allowance of claims 1, 5-9, 11-14, and 22 of the application as amended is solicited. The Examiner is encouraged to telephone the undersigned at (503) 222-3613 if it appears that an interview would be helpful in advancing the case.

Respectfully submitted,

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